

Chapter 3: The Refuge Environment

Geographic/Ecosystem Setting

The Mississippi Headwaters/Tallgrass Prairie Ecosystem

The U.S. Fish and Wildlife Service has adopted an approach to fish and wildlife conservation that is described as an ecosystem approach. What this means is that the Service is working to perpetuate dynamic, healthy ecosystems that ultimately will foster natural biological diversity. The strategy behind this effort is interdisciplinary and integrates the expertise and resources of all stakeholders.



Rydell National Wildlife Refuge lies within the Mississippi Headwaters/Tallgrass Prairie Ecosystem. This ecosystem includes the majority of Minnesota and portions of Wisconsin and Iowa. The Ecosystem is one of transition from Prairie Parkland, to Eastern Broadleaf Forest, and then to Laurentian Mixed Forest. Land uses and conditions range from northern forests dominated by tourism and timber industries to vast areas of intensively used agricultural lands, typically containing severely fragmented and degraded remnants of the

tallgrass prairie. A major threat to the Ecosystem is the continued loss and fragmentation of grassland, wetland and native woodland habitats for conversion to agricultural and other land uses. Degradation of remaining wetlands, lakes, and rivers due to runoff from agricultural lands and other non-point or point source discharges is also a concern. Timber harvesting, mineral extraction, and increasing pressures from recreational uses are problems in the northern reaches of the Ecosystem.

This Ecosystem supports neotropical and other migratory birds. It constitutes a key component of the Prairie Pothole Region, which produces 20 percent of the continental population of waterfowl. The Ecosystem supports several species of candidate and federally-listed threatened and endangered species including plants, mammals, birds, and mussels. No group of animals in the Midwest is in such grave danger of extinction as mussels. The four major watersheds of the Ecosystem (Mississippi, Minnesota, St. Croix, and Red rivers) are important habitats for these mussels and several species of interjurisdictional fishes such as the paddlefish and lake sturgeon.

The Service responsibilities must be accomplished in areas important to the state's economy. Agriculture provides a livelihood for one in four Minnesotans and the state ranks seventh in agricultural exports worth \$2.4 billion. Minnesota's forested areas not only provide important wildlife habitat and stabilize soils but they also support a \$7.8 billion forest products industry. Needs of citizens from rural, agricultural and forested areas of this ecosystem differ greatly from those of the Twin Cities, a major metropolitan area that is home to 2.2 million people.

Migratory Bird Conservation Initiatives

Partners in Flight

Nationally and internationally, several nongame bird initiatives are in the planning stage and implementation is expected to begin in the near future. Partners In Flight (PIF) is developing Bird Conservation Plans, primarily for landbirds, in numerous physiographic areas. The plans include priority species lists, associated habitats, and management strategies. The same elements will be by-products of ongoing planning efforts for shorebirds (U.S. Shorebird Conservation Plan) and colonial waterbirds (North American Colonial Waterbird Conservation Plan). As these plans are finalized, Rydell National Wildlife Refuge will strive to implement the conservation strategies they outline to the extent possible and practical.

Rydell National Wildlife Refuge lies within Partners in Flight Physiographic Area No. 40, Northern Tallgrass Prairie. Species priorities for this area can be found at <http://www.cbobirds.org/pif/physios/40.html>. The priority bird species for the grasslands/wetlands in Area No. 40 are Greater Prairie-Chicken, Nelson's Sharp-tailed Sparrow, Sedge Wren, Bobolink, and Yellow Rail. The priority bird species for riparian forest habitat is the Black-billed Cuckoo.



The Partners in Flight Plan for Physiographic Area No. 40 recommends that maintaining grassland/wetland complexes across the landscape is the most important factor necessary to maintain populations of birds in this suite. The plan recommends continuing the efforts to protect and restore wetlands in the Prairie Pothole Region, which will benefit priority non-game, wetland-associated birds. Due to the fragmented nature of grassland bird habitat, the Plan recommends providing large blocks of habitat as part of the grassland conservation objectives. The Plan proposes Bird Conservation Areas consisting of a 2,000-acre core of high quality grassland embedded in a 10,000-acre buffer. This buffer would include an additional 2,000 acres of smaller patches of grassland. (http://www.blm.gov/wildlife/pl_40sum.htm).

It is hoped that at some future point all bird conservation programs will be integrated under the umbrella of the North American Bird Conservation Initiative. This is a continental effort to have all bird initiatives operate under common Bird Conservation Regions, and for the people implementing these initiatives to consider the conservation objectives of all birds together to optimize the effectiveness of management strategies.

North American Waterfowl Management Plan

Signed in 1986, the North American Waterfowl Management Plan (NAWMP) outlines a broad framework for waterfowl management strategies and conserva-

tion efforts in the United States, Canada, and Mexico. The goal of the NAWMP is to restore waterfowl populations to historic levels. The NAWMP is designed to reach its objectives through key joint venture areas, species joint ventures, and state implementation plans within these joint ventures.

Rydell is within the U.S. Prairie Pothole Joint Venture (PPJV) area. The emphasis of the PPJV is to increase waterfowl populations through habitat conservation projects across the landscape. The philosophy of the PPJV is to accomplish projects at the local level through Federal partnerships with state and local governments, private organizations, and individuals. Through 1999, the PPJV had protected 558,420 acres of habitat, restored 223,107 acres, and enhanced 568,357 acres. Increasingly, the PPJV is cooperating in projects that will benefit shorebirds and grassland birds.

Detroit Lakes Wetland Management District

Rydell National Wildlife Refuge is located within the Detroit Lakes Wetland Management District. The District includes Becker, Clay, Mahnomon, Norman, and Polk counties. The Wetland Management District staff manage Waterfowl Production Areas and easements.

Waterfowl Production Areas preserve wetlands and grasslands critical to waterfowl and other wildlife. These public lands, managed by the U.S. Fish and Wildlife Service, became part of the National Wildlife Refuge System in 1966 through the National Wildlife Refuge Administration Act.

Wetland Management District staff also manage wetland easements; perpetual contracts with willing private landowners that protect their wetlands from draining and filling with soil. In recent years, grassland easements have been purchased to provide permanent grassland cover around wetlands to meet the needs of upland nesting waterfowl and other wildlife.

The District currently manages 40,489 fee acres on 155 Waterfowl Production Areas, and 306 easements covering 11,960 acres. In addition, 14 Conservation Easements totaling 1,340 acres are administered by the District, covering restored wetlands and farmed lands on former Farmers Home Administration inventory property.

Region 3 Fish & Wildlife Resource Conservation Priorities

The Government Performance and Results Act (GPRA) required the U.S. Fish and Wildlife Service to identify its most important functions and to direct its limited fiscal resources toward those functions. From 1997 to 1999 within Region 3, a group looked at how best to identify the most important functions of the Service within the region.

The group chose to focus on species in identifying conservation priorities. Group members prioritized species based on biological status (endangered or threatened, for example), rare or declining levels, recreational or economic value, or “nuisance” level. The group pointed out that species not on the prioritized list are important too. But, when faced with the needs of several species, the Service should emphasize the species on the priority list.

Refuge Resources, Cultural Values and Uses

General

Rydell National Wildlife Refuge is located in Grove Park and Woodside townships in Polk County, Minnesota, just south of U.S. Highway 2 between the communities of Mentor and Erskine. The Refuge is located between the flat Red River Valley floodplain on the west and the rolling hardwood forest and lake region on the east.

The Refuge is located on the eastern edge of the Lake Agassiz Plain subsection of the Red River Valley section of the ecological units of the Eastern United States. The potential natural vegetation types for the general area include bluestem prairie, northern flood plain forest along major tributaries of the Red River and, to the east, aspen parkland, dogwood-willow swamp, sedge meadow, big bluestem-Indiangrass prairie, bur oak openings-woodland, and maple-basswood forest.

Historically, bison and elk lived in the area. The dominant large predator was the wolf. Other species included prairie chicken, sharptail grouse, beaver, and meadow lark. The area supported large populations of nesting and migrating waterfowl. Major natural disturbances to the area included fire and high winds. Past changes by humans have included clearing of the land for agriculture, drainage of wetlands, logging, and the near-extinction of some fur-bearing mammals for the fur trade. Today, farming and recreation are the major human activities affecting the ecosystem.

The Refuge is part of the chain of national wildlife refuges that extends across Minnesota from the southeast to the northwest. It is also near the northernmost extent of waterfowl production areas that are scattered throughout western Minnesota. Numerous waterfowl production areas are located within 5 miles of the Refuge. (See Figure 2.)

At least 19 farmsteads existed historically within the Refuge boundaries. These farmsteads had been consolidated into one ownership by the time it was acquired by the Richard King Mellon Foundation in 1992. In the same year, the Foundation donated the property to the U.S. Fish and Wildlife Service to be managed as part of the National Wildlife Refuge System. The Refuge currently has two employees and is supported by administrative personnel of Hamden Slough National Wildlife Refuge.

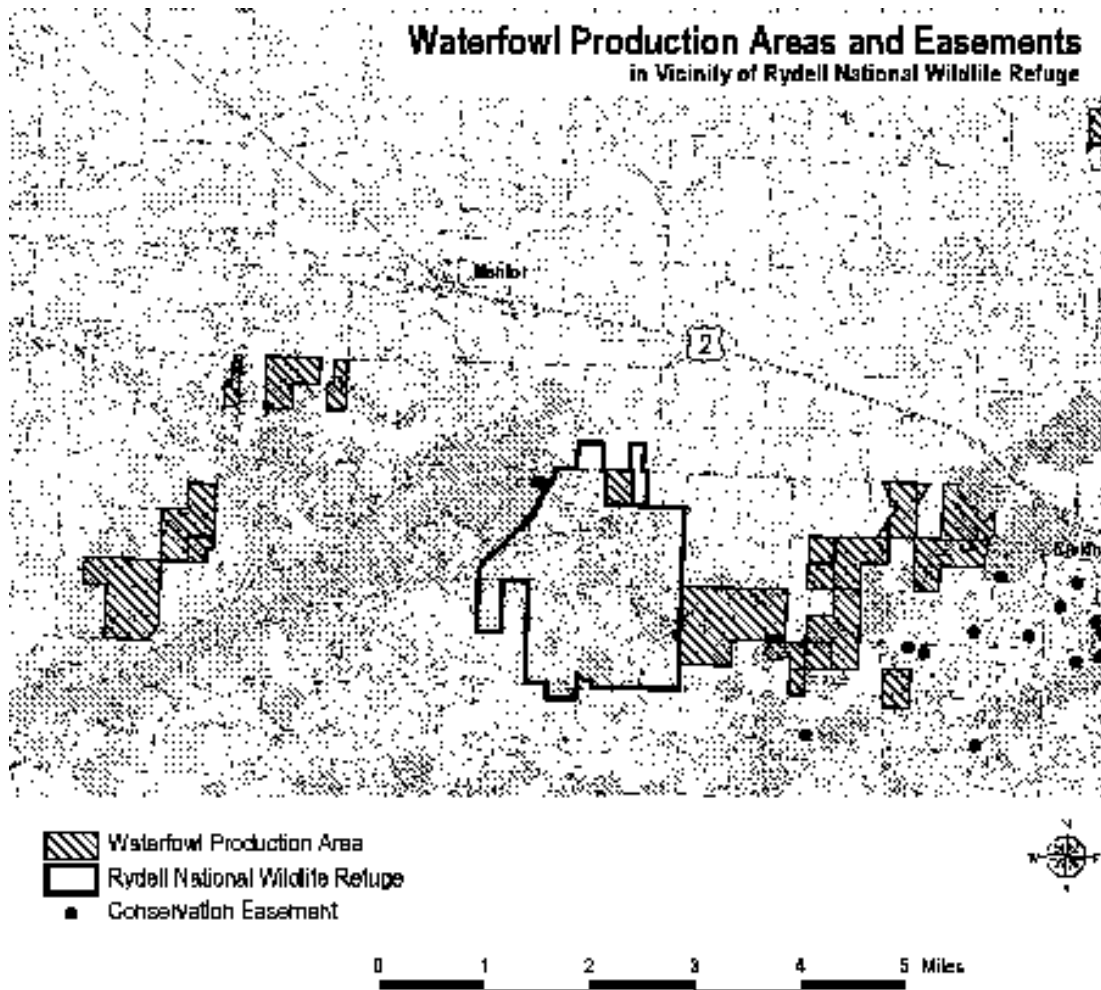
Refuge Resources

Historically, the area in which the Refuge is located was a small forested island within the Prairie Pothole Region. A concentration of lakes south and west of the Refuge formed a “fire shadow” that supported the growth of maple-basswood and oak forest surrounded by northern tallgrass prairie. (See Figure 3, Original Vegetation of Minnesota.)

Major Habitats

Many of the trees were cleared for farming during the homesteading era. The areas that were not cleared were grazed. Today the Refuge is a mosaic of wetlands, hardwood stands, conifer plantations, grass meadows and cropland. Lakes and wetlands make up 570 acres of the Refuge; trees and shrubs about 554 acres;

Figure 2: Waterfowl Production Areas and Easements Near Rydell NWR



grassland 489 acres; and cropland constitutes 272 acres (see Figure 4). The fragmentation of the plant communities negatively affects wildlife and ecosystem management. The area around the Refuge is dominated by agriculture with crops grown on most cleared land.

Plant Communities

In 1994 and 1995, a team of biologists from the University of Minnesota–Crookston conducted a baseline plant inventory with emphasis on native, remnant communities. The biologists concluded that “... the Refuge is in a uniquely positioned ecotonal setting on the borders of major North American biomes. Consideration should be given to looking at the entire Refuge as an example of large scale ecosystem restoration with a view towards restoring a sizable unit of maple-basswood and oak forest types, particularly for forest interior species (birds and plants).” Forest interior bird species are those that require large, unfragmented blocks of forest habitat. These species generally have been shown to be in decline due to pressures caused by increased predation and also nest parasitism by brown-headed cowbirds. The biologists further identified Sundew Bog as the most unique remnant community on the Refuge. The biologists also recommended controlling undesirable invasive woody species such as common buckthorn and prickly ash to protect the integrity of the native communities.

Figure 3: Original Vegetation of Minnesota

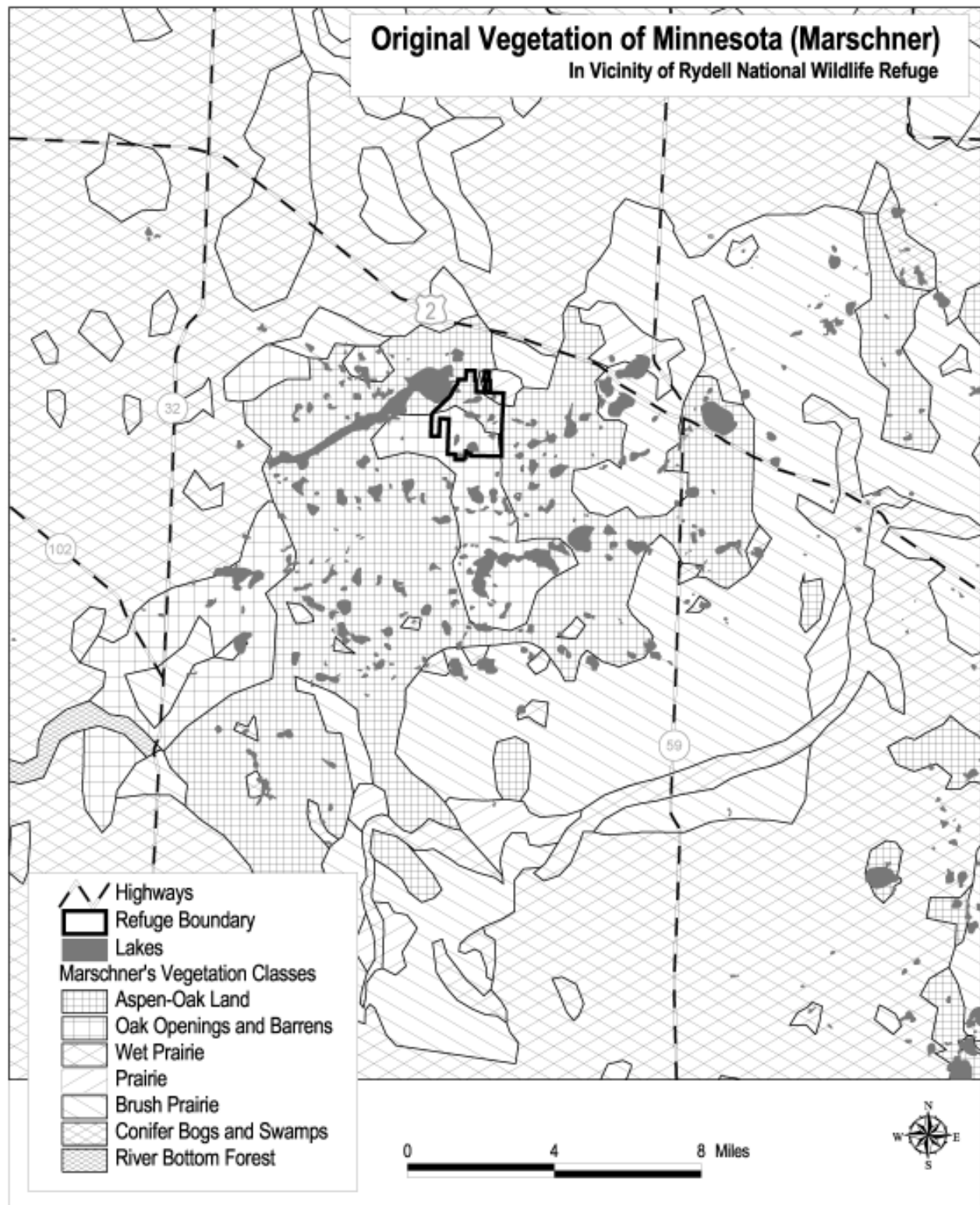
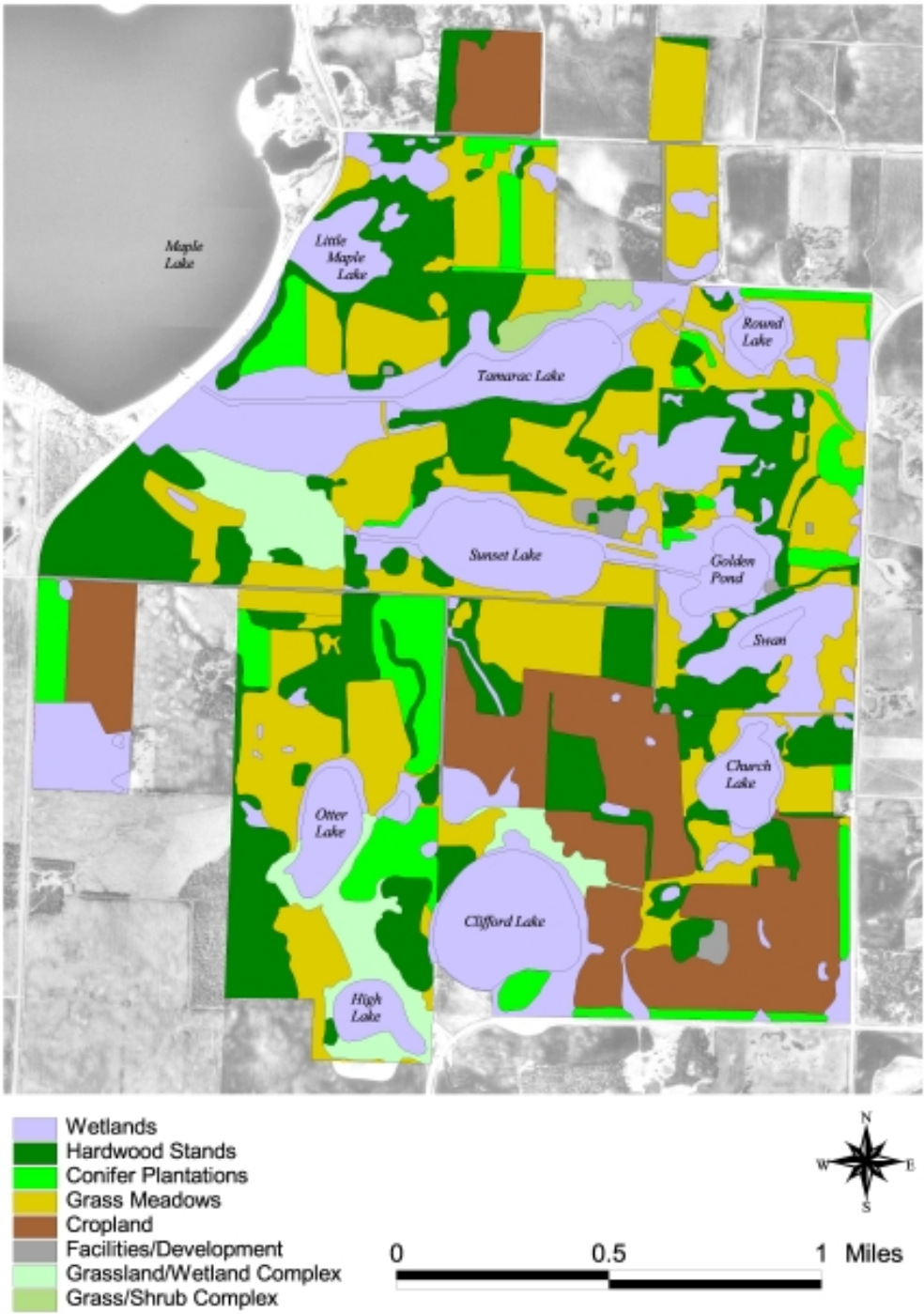


Figure 4: Current Major Habitats



Wildlife

The diverse Refuge habitat is currently used by both diving and dabbling ducks, geese, swans, white-tailed deer, moose, ruffed grouse, cormorants, herons, rabbits, raccoon, otter, beaver, mink, muskrats, fox, coyotes, black bear, hawks, and owls. More than 195 species of birds have been observed on the Refuge (see Appendix F for a list of birds, reptiles and amphibians, mammals and butterflies). A bald eagle's nest is located approximately 1 mile south of the Refuge, and eagles and osprey are often seen using Refuge habitat. Trumpeter swans, a state-listed threatened species, were recently reintroduced on the Refuge and now use the Refuge regularly. The Refuge is within the peripheral range of the gray wolf and confirmed sightings of wolves have been reported on the Refuge.

Existing Facilities

The facilities on the Refuge include the Refuge office, a residence, a Visitor Center, a maintenance shop, two cold storage buildings, a small barn, a fish hatchery building, two earthen fish rearing ponds, three homestead sites with log structures, and a number of old buildings on former building sites. Several power lines transect the Refuge. The townships have abandoned all of their former roads within the Refuge, and these former roads are closed to the public. Approximately 9 miles of hiking/cross-country skiing trails were developed on the Refuge by the former owner.



We have discontinued use of the fish hatchery. The hatchery equipment, including tanks and fish fry hatching equipment, were transferred to the LaCrosse Fishery Resources Office. Walleye fingerling production will continue in one Refuge wetland to support Fish and Wildlife Service programs off the Refuge.

Cultural Resources

Responding to the requirement in the law that comprehensive conservation plans will include "the archaeological and cultural values of the planning unit;" the Service contracted for a cultural resources overview study of Rydell National Wildlife Refuge. This section of the CCP derives mostly from the report, "A Cultural Resources Management Plan for the Rydell National Wildlife Refuge, Polk County, Minnesota," by Jeanne Ward and Robert Cromwell, Institute for Minnesota Archaeology, dated October 1997.

The Refuge has 24 reported cultural resources sites and 58 standing structures on Refuge land. Ward (1997:24) identified land characteristics on the Refuge indicative of prehistoric occupations; but Ward's areas of high potential shown on the map exclude the location of the one known prehistoric site on the Refuge. Ward studied several historic maps to determine the locations of previous and existing farmsteads and the school; but Ward's map locates no historic site at No. 9 (Gran). A historic farmstead at No. 3 (Raymond) is more problematic.

The potential for additional cultural resources on the Refuge is mixed. Undiscovered prehistoric sites are likely, especially for the Woodland culture (500 B.C. to A.D. 1650) in this vegetative transition zone. The Cheyenne tribe is the earliest historic period tribe in the area, replaced by the Ojibwa. Most likely all historic period sites have been located, with little potential for Indian sites and trading posts.

As of September 6, 2000, Polk County contains six properties on the National Register of Historic Places. All these properties are historic period structures located in cities.

Ward identified potentially interested parties. The Cheyenne, whose antecedent may have been the prehistoric Cambria culture, are not concerned about cultural properties in the Refuge area. By the early 17th century Dakota groups occupied the area, but similarly are not concerned about the Refuge area. Eventually the Ojibwa became the dominant tribe in the area, but only the Red Lake Band of Chippewa Indians now expresses an interest in cultural properties on the Refuge. No evidence exists for the removal of human remains from the Refuge area. The Polk County Historical Society has an interest in cultural resources on the Refuge. Thus, these two organizations should be consulted in the search for and evaluation of cultural properties on the Refuge.

Existing Programs

When established in 1992, the Refuge was managed by the Detroit Lakes Wetland Management District staff and one permanent Refuge employee. The Refuge now has an on-site manager and a maintenance worker. In the Refuge's first 8 years, several management emphases have emerged.

Public uses are a significant component of the Refuge's programs. All Refuge public use activities must be compatible with the National Wildlife Refuge System mission or the purposes of the Refuge. Wildlife-dependent recreational activities are compatible at Rydell. We determined that other activities are not appropriate at Rydell. These activities include the picking of wild flowers, recreational riding of all-terrain vehicles and snowmobiles, horseback riding, in-line skating, canoeing, beekeeping, fish bait harvest, and large-scale production of crops.

Volunteers and Friends

The volunteer program on the Refuge has developed and increased each year since 1992. In 1992, one volunteer contributed 320 hours of service; nine volunteers put in 373 hours in 1993; 26 people contributed 770 hours in 1994; 43 volunteers contributed 1,052 hours in 1995; 99 volunteers contributed 5,438 hours in 1996; and 164 volunteers contributed 5,455 hours in 1997. In 1998 and 1999, several volunteers logged more than 1,000 hours and one logged more than 1,500 hours. Many of the Refuge programs are possible only through the assistance of dedicated volunteers. The volunteer program is expected to grow and play an integral role in Refuge management.

The Friends of the Rydell Refuge Association was formed in 1996 to assist the Refuge with management, public use, and fund raising activities. The Friends Association received its nonprofit 501(c)(3) status in early 1997 and has begun applying for grant and aid monies to complete needed wildlife and public use projects. In 2000, the Association was awarded the Friends Association of the Year Award by the National Fish and Wildlife Foundation and the National Refuge Association.

White-tailed Deer Management Hunt

The Refuge and surrounding area historically attracted large numbers of deer, especially in winter, because both prairie and woodland habitat were available. The previous owner of the Refuge property actively encouraged deer to use the

area by planting many acres of lure crops, limiting hunting pressure, and providing a high degree of protection for the deer herd. Because of this, the deer population increased dramatically and became concentrated in the relatively small area of the Refuge.

In 1993, the Refuge and surrounding area supported about 300 white-tailed deer in the spring and fall and about 500 in the winter. Over-population by deer was obvious. Browse lines in Refuge woodlands was evident and extensive crop damage occurred annually-both on farmed Refuge land and on neighbors' land.

To reduce the damage to Refuge vegetation and neighbors' crops, all of the lure crops were discontinued on the Refuge in 1994 and several corn plots were established on private or Federal lands within a 5-mile radius of the Refuge.

In addition, antlerless deer hunts were held on the Refuge starting in November 1994. During the next 3 years, 186 antlerless deer were taken on the Refuge through the management hunt.

Because the deer herd had been reduced sufficiently, two new deer hunts were conducted on the Refuge in 1996 – one for people with disabilities and one for youth. Both were conducted in accordance with the Rydell Deer Hunting Plan. The hunt by persons with disabilities was conducted on October 18 and 19 with the cooperative assistance of the Options Resource Center for Independent Living from East Grand Forks, Minnesota, and numerous volunteer hunting assistants. Twenty-three hunters harvested 11 deer. The deer hunt for youth ages 12 through 15 was conducted on November 9 and 10 with the cooperative assistance of the Minnesota Department of Natural Resources and 30 volunteer mentors. Thirty youth hunters participated in the training and hunting and 23 harvested a deer on the Refuge.



The winter of 1998 caused a significant reduction in the Refuge deer herd. Because of the reduced population, the only hunters permitted between 1998 and 2000 were persons with disabilities. In 1998, 17 hunters harvested seven deer. In 1999, 20 hunters harvested 12 deer. In 2000, 18 disabled hunters harvested 14 deer.

Visitor and Education Programs

In cooperation with the Friends of Rydell Association, the Maple Lake Improvement District, the Union Lake Sarah Improvement Association, the Agassiz Environmental Learning Center, and numerous volunteers, several wildlife-oriented public programs were initiated on the Refuge during 1996. The programs covered bluebird houses, landscaping for wildlife, bats and astronomy. Most of the programs were well attended and they have been expanded over the years.

On August 18, 1996, a “homecoming” open house was held on the Refuge. The event was open to the general public, and individuals who formerly lived on the land that is now refuge received special invitations. More than 290 people attended the event, many of whom had ties with former homesteading families on



the Refuge. Refuge auto tours, a historical program and exhibits were available for visitors to enjoy during the day. We have continued to host an annual Refuge open house since 1996.

Conservation tours for youth from several East Polk County school districts have been hosted by the Refuge and the East Polk County Soil and Water Conservation District during the past several years. About 180 seventh graders from four schools participate in the program each year. These programs are expected to continue.

With the help of dedicated volunteers, in June of 1996 the Refuge was opened to the public from 1 to 4 p.m. on Sundays. Since then the program has expanded to 12 to 5 p.m. each Sunday, year round. Volunteers answer questions, work around the Visitor Center and direct visitors to hiking trails. For the summer of 2000, we hired a student to keep the visitor center open from 12 to 5 p.m. Thursday, Friday, and Sunday and from 10 a.m. to 5 p.m. on Saturday.

Fishery Management

Each year, walleye fry supplied by the Minnesota Department of Natural Resources are stocked in Clifford Lake. The purpose is to produce advanced fingerling walleye to help meet the annual Fish and Wildlife Service fishery goals. The fingerlings are trapped in the fall to stock lakes on Region 3 National Wildlife Refuges and Tribal lands.

Cropland Management

Approximately 800 acres, or 37 percent of the Refuge, was farmed or hayed under a cooperative agreement with local farmers when the Refuge was established in 1992. The intent of the original farming program was to provide food plots for the wintering deer herd on the acquired land. After the Refuge was established, the cooperative farming agreement allowed the co-op farmer to use Refuge lands for crop and hay production in exchange for planting food plots on private property within 5 miles of the Refuge. This program was significantly reduced as the Refuge wintering deer population decreased to an acceptable level. Today 272 acres are still being farmed. Five hundred acres have been converted from tilled land to prairie, wetland, and forest restoration areas. The majority of the remaining cropland will be converted to grassland or wetland over the next 3 years.

Cultural Resources Management

The Refuge Manager considers potential impacts of management activities on historic properties, archeological sites, traditional cultural properties, sacred sites, and human remains and cultural materials. The Refuge Manager informs the Regional Historic Preservation Officer early in the planning stage to allow qualified analysis, evaluation, consultation, and mitigation as necessary.

The Refuge has no museum nor on-refuge museum collections (art, ethnography, history, documents, botany, zoology, paleontology, geology, environmental

samples, artifacts). If an on-refuge museum were to be established, it would be required to adhere to 411 DM. To date, two cultural resources investigations have produced artifacts from Refuge lands; these collections are stored at the Minnesota Historical Society under a cooperative agreement.

Archeological investigations and collecting are performed only in the public interest by qualified archeologists working under an Archaeological Resources Protection Act permit issued by the Regional Director. Refuge personnel take steps to prevent unauthorized collecting by the public, contractors, and Refuge personnel. Violations are reported to the Regional Historic Preservation Officer.

Wilderness Review

As part of the CCP process, we reviewed the lands within the legislative boundaries of Rydell National Wildlife Refuge for wilderness suitability. No lands were found suitable for designation as Wilderness as defined in the Wilderness Act of 1964. Rydell National Wildlife Refuge does not contain 5,000 contiguous roadless acres nor does the Refuge have any units of sufficient size to make their preservation practicable as Wilderness. The lands of the Refuge have been substantially affected by humans.